

**A review of *Hibbertia hemignosta* and its allies (Dilleniaceae)
from Western Australia**

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Abstract

Wheeler, J.R. A review of *Hibbertia hemignosta* and its allies (Dilleniaceae) from Western Australia. *Nyctzia* 15(2): 277–298 (2004). The group of species that includes *Hibbertia hemignosta* (Steud.) J.R. Wheeler is reviewed and a key provided. The new species *Hibbertia acrotrichion* J.R. Wheeler and *Hibbertia chartacea* are described. Two new varieties of *Hibbertia hibbertioides* (Steud.) J.R. Wheeler, var. *meridionalis* and var. *pedunculata*, and two new varieties of *Hibbertia pulchra* Ostenf., var. *acutibractea* and var. *crassinervia*, are also described. All taxa are mapped and illustrated. Both new species have conservation priority, but the four new varieties are not considered endangered.

Introduction

This is the fifth paper in a series (Wheeler 2002a–d) revising small species groups within section *Candollea* Gilg of the genus *Hibbertia* Andr. and deals with the *Hibbertia hemignosta* group, which here comprises eleven taxa including two new species and four new varieties. This paper continues from nomenclatural studies on *Hibbertia enervia* (Toelken & Wheeler 2002), in which new combinations were made for both *H. hemignosta* and *H. hibbertioides*.

Bentham (1863) took a broad view of species in this group and combined the taxa, here recognised as *Hibbertia hemignosta* and *Hibbertia hibbertioides*, under the name *Candollea teretifolia* Turcz. Hoogland (1974) took a similar broad view and combined the same taxa under *Hibbertia enervia* (DC.) Hoogl. Ostenfeld (1921) observed that more than one taxon was involved but did not have access to the Preiss material seen by Steudel. Recent study with more material has helped to clarify the differences between the species and infraspecific taxa that belong in the *H. hemignosta* group.

The biogeographic regions listed for the distributions of the taxa follow Thackway & Cresswell (1995).

Taxonomy

Key to taxa of the *Hibbertia hemignosta* group

1. Sepals, particularly outermost, with a prominent although sometimes very small caudate tip (0.2)0.5–2.5 mm long
2. Leaves linear, terete to flattened, more or less straight, smooth or appearing 2-grooved below due to the tightly revolute margins, apex occasionally slightly recurved
3. Leaves terete to semiterete or triangular in section, rarely almost flat, smooth below
 4. Flowers sessile or subsessile **H. hibbertioides** var. **hibbertioides**
 4. Flowers distinctly pedunculate **H. hibbertioides** var. **pedunculata**
3. Leaves flattened with revolute margins appearing distinctly 2-grooved below, from near the base to apex **H. rupicola**
2. Leaves extremely narrowly obtriangular and shallowly sigmoid, lower surface only appearing very shallowly grooved due to somewhat revolute margins, apex distinctly recurved **H. hamata**
1. Sepals acute to obtuse, sometimes with a minute apical point less than 0.5 mm long
 5. Stamens 2.5–3.5(4) mm long. Anthers 1.2–1.9 mm long, oblong to elliptic, slightly tapered upwards to a subacute or apiculate apex. Leaves terete to flat
 6. Bracts conspicuous, 2–3.5 mm wide. Sepals chartaceous, obtuse to emarginate
 7. Leaves terete to semi-terete, apices with a few minute hairs **H. acrotrichion**
 7. Leaves flat, glabrous **H. chartacea**
 6. Bracts inconspicuous, up to 1.5 mm wide. Sepals herbaceous, acute to obtuse
 8. Leaves (3)4–10(12) mm long. Staminal filaments of fascicles fused for *c.* two-thirds of their length **H. hemignosta**
 8. Leaves 10–22 mm long. Stamens of fascicles fused for up to half their length **H. hibbertioides** var. **meridionalis**
5. Stamens 1.5–2.5 mm long. Anthers 0.8–1.5 mm long, oblong to obovate, the apex obtuse to truncate and often slightly dilated after anthesis. Leaves somewhat flattened to flat, sometimes midrib thickened, rarely semi-terete
 9. Bracts conspicuous, 1.5–3 mm long. Leaves flat or with a narrow raised midrib, rarely semi-terete and midrib not evident
 10. Bracts circular to depressed ovate, 2–3 mm wide **H. pulchra** var. **pulchra**
 10. Bracts ovate to elliptic, 1–1.3 mm wide **H. pulchra** var. **acutibractea**
 9. Bracts inconspicuous, 0.5–1.5 mm long. Leaves flat, with broad raised midrib **H. pulchra** var. **crassinervia**

1. *Hibbertia acrotrichion* J.R. Wheeler, *sp. nov.*

Hibbertiae hemignostae affinis sed sepalis chartaceis latioribus, obtusis vel emarginatis; bracteis latioribus magis chartaceis ad apicem pilis crispatis instructis differt.

Typus: Fitzgerald River National Park, Collets Rd, 2.3 km east of junction with West Mt Barren track, 34°10'S, 119°26'E, Western Australia, 7 September 2001, *J.R. Wheeler* 4090 (*holo:* PERTH 06458173; *iso:* AD, CANB, K, MEL, NSW).

Shrub to 0.3 m high; branchlets glabrescent, with appressed curled hairs on new growth. *Leaves* spirally arranged, mostly clustered on short axillary shoots, sessile, linear, terete to semi-terete, straight to slightly curved, 4–7 mm long, 0.5–0.7 mm wide, glabrous apart from a small tuft of curled hairs at the apex. *Flowers* solitary, terminal or terminating short shoots, sessile, 10–14 mm diam.; *bracts* 1–3 below the flower, dark brown or red-brown, very broadly ovate to circular, 1–3 mm long, 2–3 mm wide, somewhat chartaceous and easily torn, glabrous or almost so, the outermost with a prominent apiculum and dark midline and usually with a few curled hairs towards the apex, the innermost obtuse with a minute point. *Sepals* 5, dark and somewhat chartaceous, very broadly elliptic, obtuse to slightly emarginate; outer sepals 3.5–4.5 mm long, 4–5 mm wide; inner sepals 4–6 mm long, 4–5 mm wide. *Petals* 5, yellow, obovate, 6–7 mm long, emarginate. *Stamens* 11, 9 of them grouped into 3 fascicles each of 3 stamens and 2 single stamens, 2.5–3.5 mm long; filament 1–1.5 mm long, distinctly fused in the fascicles for approximately two-thirds of their length; anther oblong to elliptic, 1.2–1.8 mm long, obtuse to subacute. *Carpels* 3, obovoid, 1–1.2 mm long, 0.5–0.8 mm wide, glabrous; style erect, *c.* 2 mm long; ovule 1 per carpel. *Fruiting carpels* ellipsoid, *c.* 2.5 mm long and 1.5 mm wide. (Figure 1).

Other specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: Bremer Bay, 12 Sep. 1971, *S. Paust* 570; Bremer Bay, 1901, *J. Wellstead s.n.*; *c.* 2 km W of track to West Mt Barren, Fitzgerald River National Park, 23 Sep. 1986, *J.R. Wheeler* 2440 (duplicate CANB); Boxwood Hill, Paperbark Rd, property of Rex Parsons, near the Pallinup River Reserve, 3 Aug. 2000, *J.R. Wheeler* 4046 (duplicate AD); Fitzgerald River National Park, Collets Rd, *c.* 2 km W of junction with West Mt Barren track, 7 Sep. 2001, *J.R. Wheeler* 4084 (duplicate MEL); Fitzgerald River National Park, Collets Rd, *c.* 2 km W of junction with West Mt Barren track, 7 Sep. 2001, *J.R. Wheeler* 4085 (duplicates AD, K, DUKE); Plateau N of Hamersley River, 5 miles [8 km] from Phillips River Crossing, 28 Aug. 1965, *E. Wittwer* 436.

Distribution. Western Australia, South West Botanical Province, IBRA region of Esperance Plains. Restricted to the south coast between Bremer Bay and Ravensthorpe. (Figure 2).

Habitat. Recorded from sandy soils in heath or mallee heath.

Phenology. Flowers recorded August and September. Only a single fruiting carpel seen (*J. Wellstead s.n.*) with no exact date of collection.

Conservation status. Conservation Codes for Western Australian Flora: Priority Two. Apparently restricted in distribution being known from very few populations but is recorded from a National Park.

Etymology. From the Greek *acros* – at the tip and *trichion* – small hair, referring to the presence of small curled hairs towards the apex of an otherwise glabrous leaf.

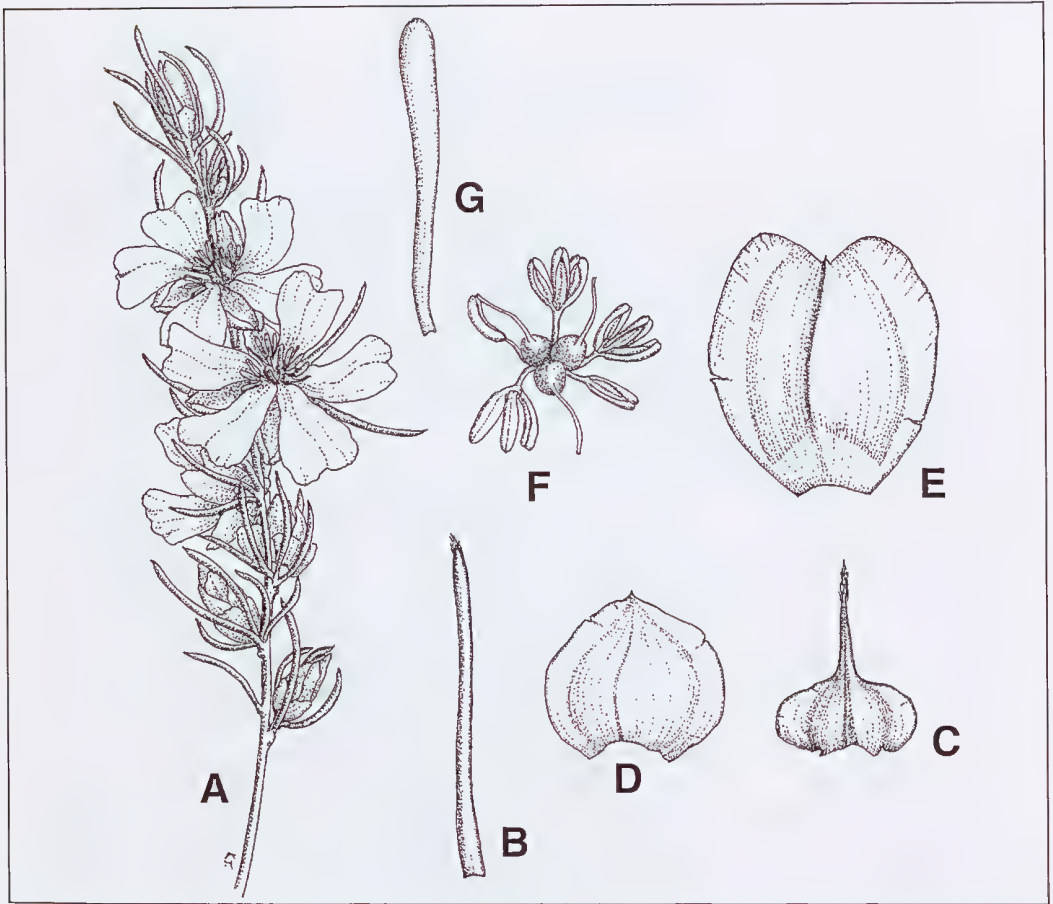


Figure 1. A–F. *Hibbertia acrotrichion*. A –flowering branch (x2), B – leaf (x4), C – outer bract (x8), D – inner bract (x8), E – sepal (x8), F – stamens and carpels (x8); G – *Hibbertia chartacea*, leaf (x8). Drawn from J.R. Wheeler 4090 (A–F) and A. Strid 20314 (G).

Affinities. Similar to *Hibbertia hemignosta* but quite distinct in its prominent broad bracts, larger and obtuse to emarginate sepals which are thinner and easily torn. Also differs in the presence of a few small curled hairs at the apex of the leaves. Similar to *H. pulchra* in its conspicuous bracts, but differing in leaf shape, leaf indumentum, its more emarginate sepals, and longer stamens with more slender filaments and larger oblong to elliptic anthers which are slightly tapered to an obtuse to subacute apex. *H. pulchra* has flattened to flat glabrous leaves, smaller oblong to obovate anthers with a slightly incurved obtuse to truncate apex and coarser staminal filaments fused for most of their length. *H. pulchra* var. *acutibractea* sometimes has curled hairs on the leaves but these are either confined to the lower half of the leaf or spread evenly over the leaf and are never confined to the apex.

Note. Previously known by the phrase name *Hibbertia* sp. Bremer (J.R. Wheeler 2440).

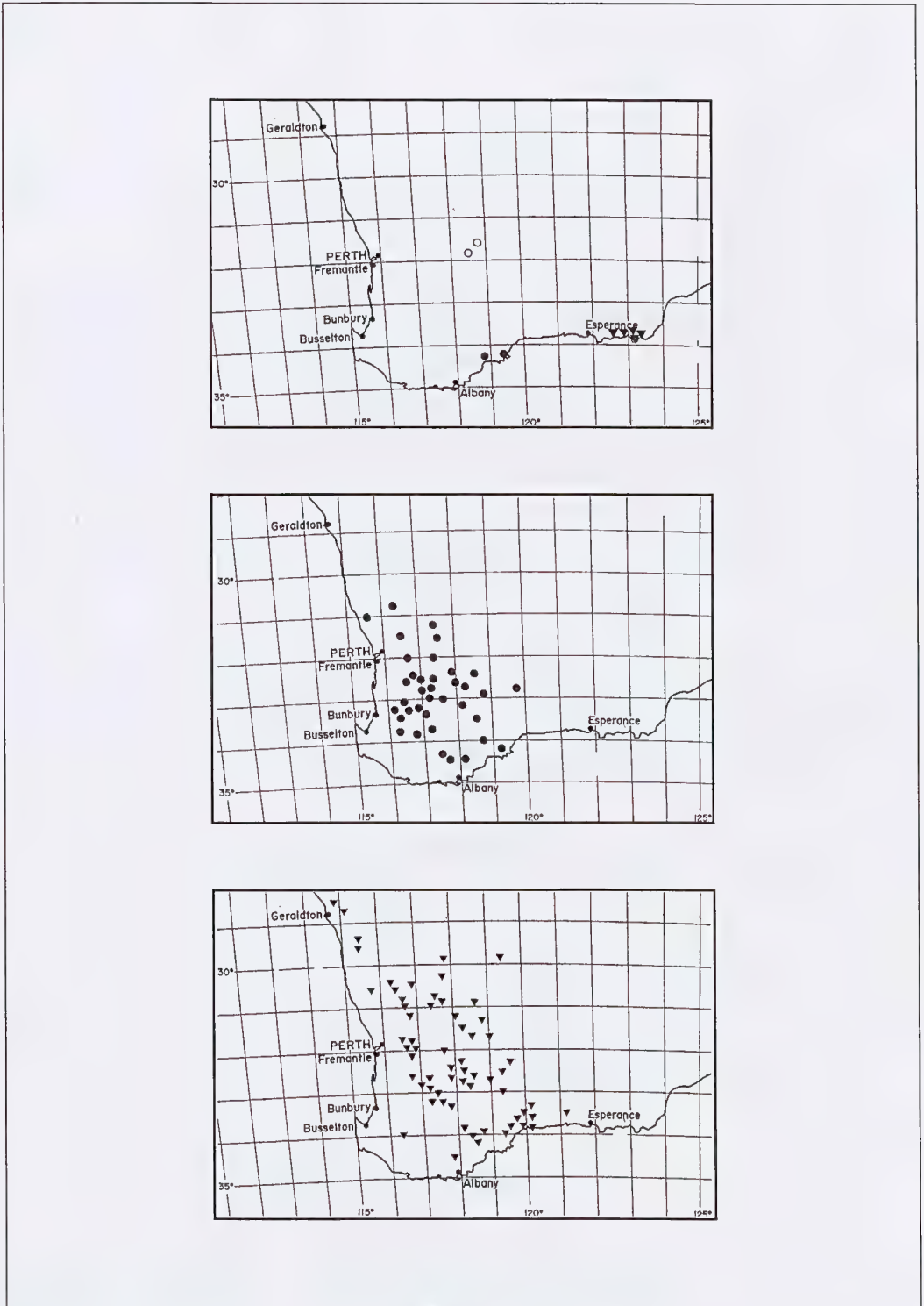


Figure 2. Distribution maps. A – *Hibbertia acrotrichion* ●, *H. chartacea* ○ and *H. hamata* ▼; B – *H. hemignosta*; C – *H. rupicola*.

2. *Hibbertia chartacea* J.R. Wheeler, *sp. nov.*

Hibbertiae hemignostae affinis sed foliis applanatis, bracteis magis conspicuis, sepalis chartaceis latioribus differt.

Typus: South side of Bruce Rock East Rd, 0.45 km west of its junction with Merredin–Narembeen road, Western Australia, 3 September 2001, *J.W. Horn* 4044 (*holo*: PERTH 06853102; *iso*: DUKE n.v.).

Shrubs to 0.5 m high; branchlets glabrescent but with short curled hairs. *Leaves* glaucous, in spirally arranged clusters, sessile, very narrowly oblong to very narrowly obovate, thick but flattened, 5–8 mm long, 0.5–0.8 mm wide, glabrous, midrib thickened below, apex more or less obtuse but very slightly recurved. *Flowers* terminating short axillary shoots, 7–15 mm diam., sessile; *bracts* 3 conspicuous, very broadly ovate to circular, 2–3 mm long, 2–3.5 mm wide, obtuse, the outermost firm in texture with a dark midline and distinctly caudate apex, the innermost chartaceous, easily torn and usually minutely apiculate. *Sepals* 5, often brown, basally fused, very broadly elliptic, chartaceous and easily torn, obtuse and apiculate; outer sepals 3.5–4 mm long, 2.5–3.5 mm wide; inner sepals 4–5 mm long, 3–4.5 mm wide. *Petals* 5, yellow, obovate, 4.5–8 mm long, emarginate. *Stamens* 11, 9 of them grouped into 3 fascicles and 2 single, *c.* 3 mm long; filament 1–2 mm long, the fascicles fused for at least two-thirds of their length; anther narrowly elliptic, 1.5–1.9 mm long, subacute to apiculate. *Carpels* 3, globular, 1–1.2 mm long, 0.8–1.2 mm wide; style erect, 1.5–2.5 mm long; ovule 1 per carpel. *Fruiting carpels* not seen mature. (Figure 1).

Specimens examined (all PERTH), WESTERN AUSTRALIA: 26 km due SE Bodallin, 16 Sep. 1982, *R.J. Cranfield* 2367; 24 km SSE Carrabin and NNE of Noombenderry Rock, flora and fauna reserve on land survey blocks nos. 969 and 975, 15 Sep. 1982, *A. Strid* 20314; 24 km SSE Carrabin and NNE of Noombenderry Rock, flora and fauna reserve on land survey blocks nos. 969 and 975, 15 Sep. 1982, *A. Strid* 20530.

Distribution. Western Australia, South West Botanical Province, IBRA region of Avon Wheatbelt. Recorded only from SSE of Carrabin and east of Bruce Rock. (Figure 2).

Habitat. Recorded from shrubland and mallee shrubland on sandy or lateritic soils.

Phenology. Flowers recorded for September.

Conservation status. Conservation Codes for Western Australian Flora: Priority Two. Apparently restricted in distribution, being recorded from few localities, although one from flora reserve.

Etymology. From the Latin *chartaceus* – papery, referring to the texture of the sepals and bracts.

Affinities. Similar to *Hibbertia hemignosta* in its stamens but differing in its flatter leaves, more conspicuous chartaceous bracts and its broader thin brownish sepals. The sepals and bracts of *H. chartacea* are very similar to those of *Hibbertia acrotrichion* being brownish, thin and easily torn, but its leaves are quite different. The leaves and bracts are quite similar to those of *Hibbertia pulchra*, however its stamens are longer, elliptic and tapered towards their apex as those of *H. hemignosta*.

3. *Hibbertia hamata* (F. Muell.) F. Muell., *Fragm. Phyt. Austral.* 4, 189 (1864). – *Hibbertia teretifolia* var. *hamata* F. Muell., *Fragm. Phyt. Austral.* 4, 117 (1864). *Type*: “a promontorio” Cape Le Grand, [Western Australia] (*holo*: MEL 666839).

Shrub erect to 0.5 m high; branchlets hairy with appressed, straight to slightly curved, often brownish hairs. *Leaves* clustered on spirally arranged short axillary shoots, sessile, extremely narrowly obtriangular, thick and very shallowly sigmoid, 3–10 mm long, 0.4–0.8 mm wide, margins somewhat revolute with the leaf appearing slightly longitudinally 2-grooved but the grooves very shallow and laterally expanded towards the leaf apex, the distal part of the leaf very thick and distinctly recurved, apiculate. *Flowers* terminating short shoots, sessile, 5–10 mm diam.; *bracts* apparently absent or 1 or 2 inconspicuous and subulate to leaf-like or ovate and long-caudate, usually 1–2 mm long. *Sepals* 5, thin, glabrous, the midrib extended as a caudate apex; outer sepals elliptic, 3–4.5 mm long, 1–2 mm wide, body 2–3 mm long, with a long caudate apex 1–2 mm long; inner sepals broadly elliptic, 4–4.5 mm long, 2–3 mm wide, body 3.5–4 mm long, with a caudate apex 0.5–1 mm long. *Petals* 5, yellow, obovate, shallowly emarginate, 3–6 mm long. *Stamens* 11, arranged in 3 fascicles of 3 stamens and 2 single stamens, 2–2.5 mm long; filament 0.5–1 mm long, those in fascicles clearly fused for two-thirds to three-quarters of their length; anther oblong-elliptic, 1–1.5 mm long, more or less obtuse and occasionally apiculate. *Carpels* 3, more or less globular, 0.6–1 mm diam., glabrous; ovule 1 per carpel; style 1.5–2 mm long. *Fruiting carpels* broadly ellipsoid, 1.5–2 mm high; seed brown, ellipsoid, c. 1.5 mm long, with a greatly divided white waxy aril extending for half the length of the seed. (Figure 4A)

Other specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: Condingup Peak, c. 25 miles [40 km] E of Esperance, 4 Oct. 1971, *R.D. Hoogland* 12061 (duplicates CANB, L n.v.); c. 8 km SW of Mt Boyatup (Mt Boyatup is c. 110 km E of Esperance), 5 Oct. 1968, *E.N.S. Jackson* 1339 (duplicate AD n.v.); Boyatup Hill, c. 110 km E of Esperance just N of Fisheries Rd, 1 Oct. 1968, *A.E. Orchard* 1281 (duplicate AD n.v.); Howick Hill, c. 100 km E of Esperance just N of Fisheries Rd, 2 Oct. 1968, *A.E. Orchard* 1304 (duplicate AD n.v.); Boyatup Hill, c. 130 km E of Esperance, on road to Israelite Bay, 18 Dec. 1974, *R. Pullen* 10.084 (duplicate CANB n.v.); Thomas River, Cape Arid National Park, E of Esperance, 1 Dec. 1971, *R.D. Royce* 9943; N of Howick Hill on Howick Hill Rd, 2.8 km NW of Henkes Rd, 3 Oct. 1982, *B.L. Rye* 82027 (duplicate CANB n.v.); Boyatup Hill, c. 1 km N of road from Esperance to Cape Arid National Park, 19 km from W border of park, 8 Nov. 1982, *A. Strid* 21250; Mt Howick, 1 Oct. 1968, *P.G. Wilson* 8163 (duplicates K, MEL); 75 miles [120 km] from Esperance towards Balladonia via Condingup, 3 Nov. 1968, *J. Wrigley s.n.* (duplicate CBG n.v.).

Distribution. Western Australia, South West Botanical Province, IBRA region of Esperance Plains. Recorded from between Condingup and Cape Arid. (Figure 2A).

Habitat. Granitic hills, often inland from the coast.

Phenology. Flowers and fruits recorded for October to December.

Conservation status. Conservation Codes for Western Australian Flora: Priority Three. *Hibbertia hamata* appears to be restricted in distribution to inland granitic hills between Condingup and Cape Arid.

Affinities. This species, originally considered to be a variant of *H. teretifolia*, has certain affinities to both *H. hibbertioides* and *H. rupicola*, in its similar caudate sepals and densely clustered leaves. Its leaves are perhaps intermediate between these two species in the degree of recurvedness of the leaf margin,

the leaves being only slightly longitudinally grooved on the lower surface and certainly not as clearly grooved as those of *H. rupicola*. However, *H. hamata* clearly differs from both *H. hibbertioides* and *H. rupicola* in its extremely narrowly obtriangular (rather than linear) leaf shape and shallowly sigmoid leaf posture. The flowers are always sessile, whereas those of both *H. hibbertioides* and *H. rupicola* vary from sessile to pedunculate. The stamens (as they are in *H. hibbertioides*) are consistently 11 in number with 3 fascicles of 3 stamens and 2 free stamens, whereas those of *H. rupicola* (although most commonly as in the other two species) may vary in number from 9–17 with up to 6 stamens in any one fascicle and occasionally with up to 5 fascicles.

4. *Hibbertia hemignosta* (Steud.) J.R. Wheeler in H.R. Toelken & J.R. Wheeler, *J. Adelaide Bot. Gard.* 20: 1–4 (2002). – *Pleurandra hemignosta* Steud., *Pl. Preiss.* 1: 265 (1845). *Type*: Southwestern Australia, *Preiss* 2172 (*holo*: LD).

Shrub to 0.3(0.5) m high, prostrate to erect; branchlets glabrescent, with appressed curled hairs. *Leaves* spirally arranged, mostly clustered on very short axillary shoots, sessile, linear and terete to more or less triangular in section, (3)4–10(12) mm long, 0.3–0.7 mm wide, usually glabrous, obtuse to apiculate; leaf base sometimes flattened, slightly dilated and ciliolate. *Flowers* sessile, solitary terminating short axillary shoots, 9–15 mm diam.; *bracts* 2–4, ovate to broadly ovate or elliptic to broadly elliptic, 1–1.5 mm long, 0.7–1.5 mm wide, obtuse to subacute and often long-apiculate, outermost bracts usually with a dark caudate apex equal to almost half the total length, glabrous or woolly ciliolate. *Sepals* 5, elliptic, glabrous, with paler membranous margins, obtuse to subacute and often with a tiny apiculate point up to 0.2 mm long, glabrous or the margins woolly ciliolate; outer sepals 2.5–3.5(4) mm long, 1–2.5 mm wide; inner sepals broader and longer, 3.5–5(5.5) mm long, (2.5)3–4.5 mm wide. *Petals* 5, obovate, 4–7 mm long, obtuse to shallowly emarginate. *Stamens* 11, 9 of them grouped into 3 fascicles and 2 single, 2.5–3 mm long; filament 1–2 mm long, in the fascicles fused for at least two-thirds of their length; anther narrowly elliptic, (1)1.2–1.8 mm long, sometimes apiculate. *Carpels* 3, more or less erect, 1–1.5 mm long, 0.5–1 mm wide; style 2–2.5 mm long; ovules 1 per carpel. *Fruiting carpels* obovoid, c. 2.5 mm long, 1.5 mm wide; seed brown, ellipsoid, c. 1.5 mm long and c. 1 mm wide. (Figure 3A–D).

Selected specimens examined. (all PERTH except where indicated). WESTERN AUSTRALIA: Plot 5191, Yerriminup Rd, 9 Aug. 1993, *A.R. Annels* 3456; Quairading, town limit on road to Tammin, Avon district, 20 July 1980, *M.D. Crisp* 6611 (duplicates CBG, NSW *n.v.*); on northern side of gridline, c. 25 metres NE of South Ironcap Trig, 7 Sep. 1996, *N. Gibson & K. Brown* 2522; Kukerin Rd North East, 1.3 km NE of Kukerin, 9 Sep. 1999, *M. Graham* 1098; Metro Rd, Gibbs State Forest, Shire of Wandering; 2.5 km S of Division Track, 22 Aug. 1999, *F. Hort* 545; 10 km SW of Toodyay, 10 Aug. 1973, *A. Kanis* 1670 (duplicate CANB *n.v.*); Site 62, off Boundary Rd, 9 km NNE of Mt Dale bearing W, 6 Aug. 1997, *G. Paull* 1073; 8 miles [13 km] S of Chester Pass, Stirling Range, 14 Aug. 1951, *R.D. Royce* 3715; Dumbleyung–Lake Grace road, 11.9 km W of Tarin Rock and c. 34 km W of Lake Grace, 21 Sep. 1986, *J.R. Wheeler* 2407; just N of Toolibin, 2 km N of Line Rd on Narrogin–Harrismith road, 11 Oct. 2001, *J.R. Wheeler* 4143 (duplicate AD); 14 miles [22 km] E of Ongerup, Aug. 1957, *C.L. Wilson & D.M. Churchill* CLW796; 1 mile [1.6 km] E of Wyalkatchem, 15 June 1974, *E. Wittwer* 1222.

Distribution. Western Australia, South West Botanical Province, IBRA regions of Swan Coastal Plain, Jarrah Forest, Avon Wheatbelt and Mallee. Recorded from north of Yerrecoina south to just south of the Stirling Range and east to South Ironcap and just west of the Fitzgerald River National Park. (Figure 2B).

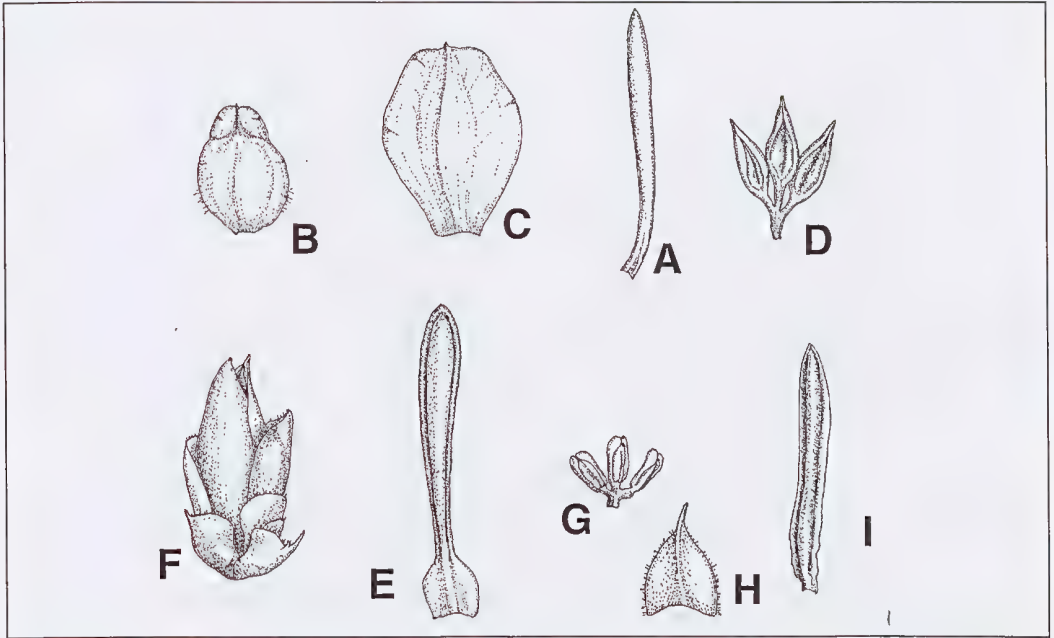


Figure 3. A-D. *Hibbertia hemignosta*. A - leaf (x8), B - outer sepal (x8), C - inner sepal, D - staminal bundle; E-G. *Hibbertia pulchra* var. *pulchra*. E - leaf (x8), F - flower showing bracts and sepals only (x8), G - staminal bundle (x8); H - *Hibbertia pulchra* var. *acutibractea*, bract (x8); I - *Hibbertia pulchra* var. *crassinervia*, leaf (x8). Drawn from G.J. Keighery 9321 (A-D), R.D. Royce 2375 (E-G), J.R. Wheeler 2490 (H) and G.J. Keighery & J. Alford 1613 (I).

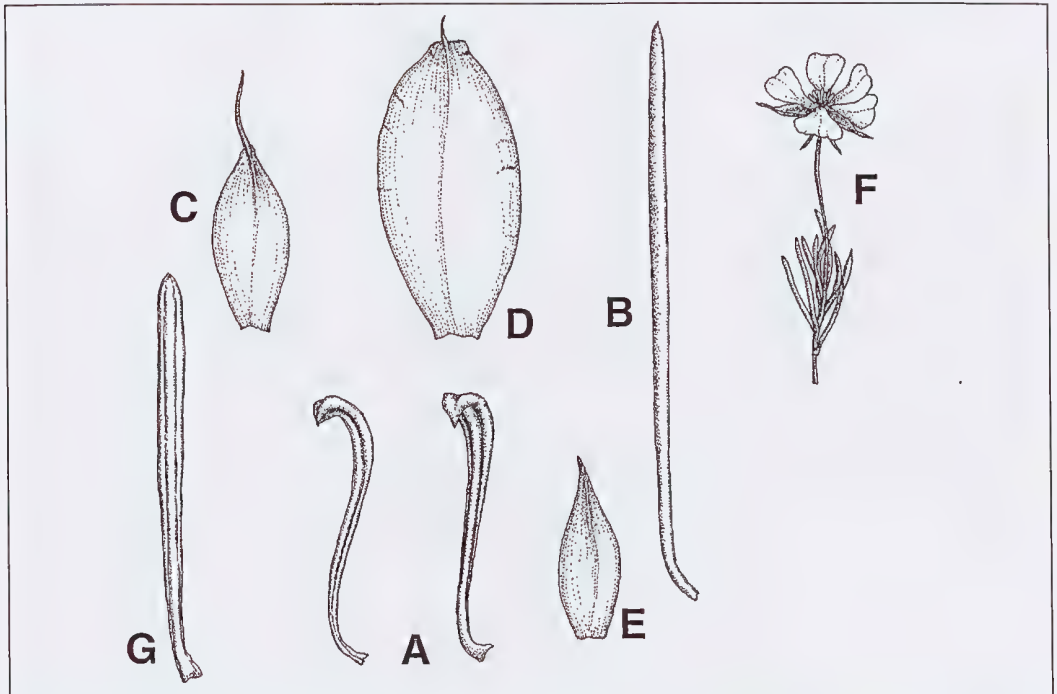


Figure 4. A - *Hibbertia hamata*, leaves (x8); B-D. *Hibbertia hibbertioides* var. *hibbertioides*. B - leaf (x8), C - outer sepal (x8), D - inner sepal (x8); E - *Hibbertia hibbertioides* var. *meridionalis*, outer sepal (x8); F - *Hibbertia hibbertioides* var. *pedunculata*, flower (x2); G - *Hibbertia rupicola*, leaf (x8). Drawn from B.L. Rye 82027 (A), M.G. Allen 1023 (B-D), J.R. Wheeler 4151 (E), R.J. Cranfield 4687 (F), and M.S. Graham 1047 (G).

Habitat. Occurs on a variety of soils in heath, shrubland, woodland or forest.

Phenology. Flowers recorded June to October; fruits recorded October and November.

Conservation status. Widespread and not believed to be under threat.

Affinities. Differing from *Hibbertia hibernioides* in its bracts, the apex of the sepals and the degree of fusion of the stamens. The leaves of *H. hibernioides* are more commonly terete, the bracts narrower, the sepals usually distinctly caudate and the stamens more variable in their degree of fusion into fascicles and bearing more oblong anthers. The fusion of the stamens in *H. hemignosta* is such that two anthers are held side by side and the third held forwards towards the centre of the flower. This is a common arrangement of anthers in many species of section *Candollea*, but it is not clearly seen in the collections of *H. hibernioides*, perhaps due to their lesser degree of fusion.

Notes. Collections from South Ironcap have particularly glaucous foliage (*N. Gibson & K. Brown* 2522, 3058, *M.D. Carter* 549). Some collections from Tuttanning Reserve east of Pingelly may be intermediate between *H. hemignosta* and *H. hibernioides*. See note under *H. hibernioides* var. *hibbertioides*.

5. *Hibbertia hibernioides* (Steud.) J.R. Wheeler in H.R. Toelken & J.R. Wheeler, *J. Adelaide Bot. Gard.* 20: 1–4 (2002). – *Pleurandra hibernioides* Steud., *Pl. Preiss.* 1: 265 (1845). *Type:* Mt Bakewell [near York, Western Australia], *L. Preiss* 2164 (*holo:* LD; *iso:* MEL 666837).

Candollea teretifolia Turcz., *Bull. Soc. Natural. Moscou* 22(2): 6(1849) – *Hibbertia teretifolia* (Turcz.) F. Muell., *Fragm. Phyt. Austral.* 4: 117 (1864). *Type:* New Holland, *J. Drummond* 4, 124 (*holo:* KW; *iso:* MEL 666838, PERTH 04430506).

Shrub, prostrate or sprawling to 0.3 m high, rarely erect and to 0.7 m high; branchlets usually glabrous or occasionally glabrescent with minute curled hairs on the young growth. *Leaves* crowded, pale, greyish or glaucous, spirally arranged and often densely clustered on short axillary shoots, sessile to subsessile, linear and terete to triangular in section or very slightly flattened, 3.5–17 (23) mm long, 0.3–0.6(0.8) mm wide, glabrous, slightly tapered towards a distinctly apiculate apex. *Flowers* solitary, axillary or terminating short leafy shoots, subsessile to distinctly pedunculate or less often sessile, (8)10–15 mm diam.; *peduncle* when present up to 17 mm long, often much shorter in bud; *bracts* inconspicuous, subulate or ovate and long-caudate, 1–2 mm long, 0.2–0.7 mm wide, sometimes ciliolate. *Sepals* 5, pale green and sometimes tinged with purple, glabrous, caudate; outer sepals elliptic, (3.5)4.5–7 mm long, the body 3–5 mm long, 1.5–2.5 mm wide, distinctly shorter than that of the inner sepals, acute to more or less obtuse but with the midrib extended as a usually conspicuous caudate tip (0.2–0.5)1–3 mm long; inner sepals broadly elliptic, (4)5.5–7.5 mm long, 2.5–3 mm wide, the body 4.5–7 mm long and more obtuse with a caudate tip (0.2–0.5)0.5–2 mm long. *Petals* 5, yellow, obovate, (3–4)5–9 mm long, shallowly emarginate. *Stamens* (10)11, 9 of them grouped in 3 fascicles each of (2)3 stamens and also with 1 or 2 separate stamens, 2.5–3.5 mm long; filament 1–2 mm long, varying from distinctly to scarcely fused, most commonly only shortly fused and often with 2 of the 3 filaments fused to a greater degree than the third; anther oblong-elliptic, (0.8)1.5–1.8(2) mm long, often apiculate. *Carpels* 3, erect, 0.8–1.2 mm long, 0.5–1 mm wide, glabrous; style 2–3 mm long; ovules 1 per carpel. *Fruiting carpels* obovoid-ellipsoid, 2–2.5 mm long, c. 1.5 mm wide; seeds brown, very broadly ellipsoid to globular, 1.2–1.5 mm diam., with a large white and greatly divided waxy aril extending c. half the length of the seed.

Affinities. Previously confused with *Hibbertia hemignosta* and included by Hoogland (1974) under *H. enervia*. *Hibbertia hibbertioides* clearly differs from *H. hemignosta* in its longer and usually distinctly caudate sepals and in its narrower bracts which are less conspicuous and subulate to ovate and caudate. *H. hibbertioides* differs from *H. rupicola* in its usually thicker leaves which are terete to semi-terete in cross-section and which have no signs of the revolute leaf margin characteristic of *H. rupicola*. The stamens of *H. hibbertioides* are variable in the degree of staminal filament fusion and are frequently only very shortly fused, whereas those of both *H. hemignosta* and *H. rupicola* are fused for much of their length.

Notes. Three infraspecific taxa are recognised. Varietal rank has been adopted for these entities because they all have similar leaves, bracts, sepals and stamens. Var. *pedunculata* is not separated geographically or ecologically from var. *hibbertioides* but has a clearly defined and easily observable character difference. Var. *meridionalis*, although clearly separated both geographically and ecologically from the other two taxa, exhibits differences that are less clearly defined.

Key to varieties of *Hibbertia hibbertioides*

1. Flowers sessile to subsessile
2. Sepals with conspicuously caudate sepals, the caudate apex of the outer sepals (0.5)1–3 mm long. Stamens 2.5–3.5 mm long, anther (1.2)1.4–1.7 mm long var. **hibbertioides**
2. Sepals with inconspicuously caudate sepals, the apex of the outer sepals 0.5–0.8 mm long. Stamens 1.5–2 mm long, anther 0.8–1 mm long var. **meridionalis**
1. Flowers pedunculate, the peduncle (3)5–17 mm long var. **pedunculata**

5a. *Hibbertia hibbertioides* (Steud.) J.R. Wheeler var. **hibbertioides**

Shrub to 0.3 m, often prostrate or sprawling. *Leaves* sometimes glaucous, terete to semi-terete, occasionally somewhat flattened, 4–10(14) mm long, 0.4–0.6(1) mm wide. *Flowers* 10–15 mm diam., sessile or subsessile; *bract* subulate or ovate-oblong and long-caudate. *Sepals* 5–7 mm long, apex long-caudate with the tip of the outer sepal (0.5)1–2.5(3) mm long. *Petals* 5–9 mm long. *Stamens* 2.5–3.5 mm long; anther 1.3–1.8(2) mm long. (Figure 4B–D).

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: 5 km from Darkan along road to Williams, Darling District, 22 Jan. 1979, *B. Barnsley* 833 (duplicate CBG *n.v.*); 9.7 miles [15.5 km] from Gingin towards Bindoon at the Moora–Mogumber turnoff, 28 Sep. 1968, *E.M. Canning* WA/68 3568 (duplicates CANB, CBG, L all *n.v.*); crown land, 3.5 km at 65 degrees from Mount Lesueur, NE of Jurien, 11 Oct. 1979, *E.A. Griffin* 2360; Tuttanning Reserve (17 miles [26 km] E of Pingelly) 17 Oct. 1967, *G. Heinsohn* 99; on track to Mt Nyroomanning, NE of Bindoon, 18 Oct. 1998, *M. Hislop* 1162; along Great Northern Highway some miles N of South Bindoon, 11 Nov. 1974, *R.D. Hoogland & G.L. Stebbins* 12495 (duplicates CANB, HBG, K, L, NSW, TNS, UC, US all *n.v.*); Oakley Dam, Dwellingup, 27 Oct. 1906, *P.C. Kimber* 216; Chittering, 2 Dec. 1953, *R.D. Royce* 4713; lower N–NE slopes of Mt Bakewell, c. 3.5 km due NNW of York, 16 July 1984, *J.R. Wheeler* 2271; 70 km S of Moora on the Great Northern highway, 3 Nov. 1974, *D.J.E. Whibley* 4984 (duplicate AD *n.v.*).

Distribution. Western Australia, South West Botanical Province, IBRA regions of Geraldton Sandplain, Swan Coastal Plain, Jarrah Forest and Avon Wheatbelt. Recorded from Mt Lesueur to Dwellingup and Darkan, extending east to Tuttanning Reserve east of Pingelly. (Figure 5A).

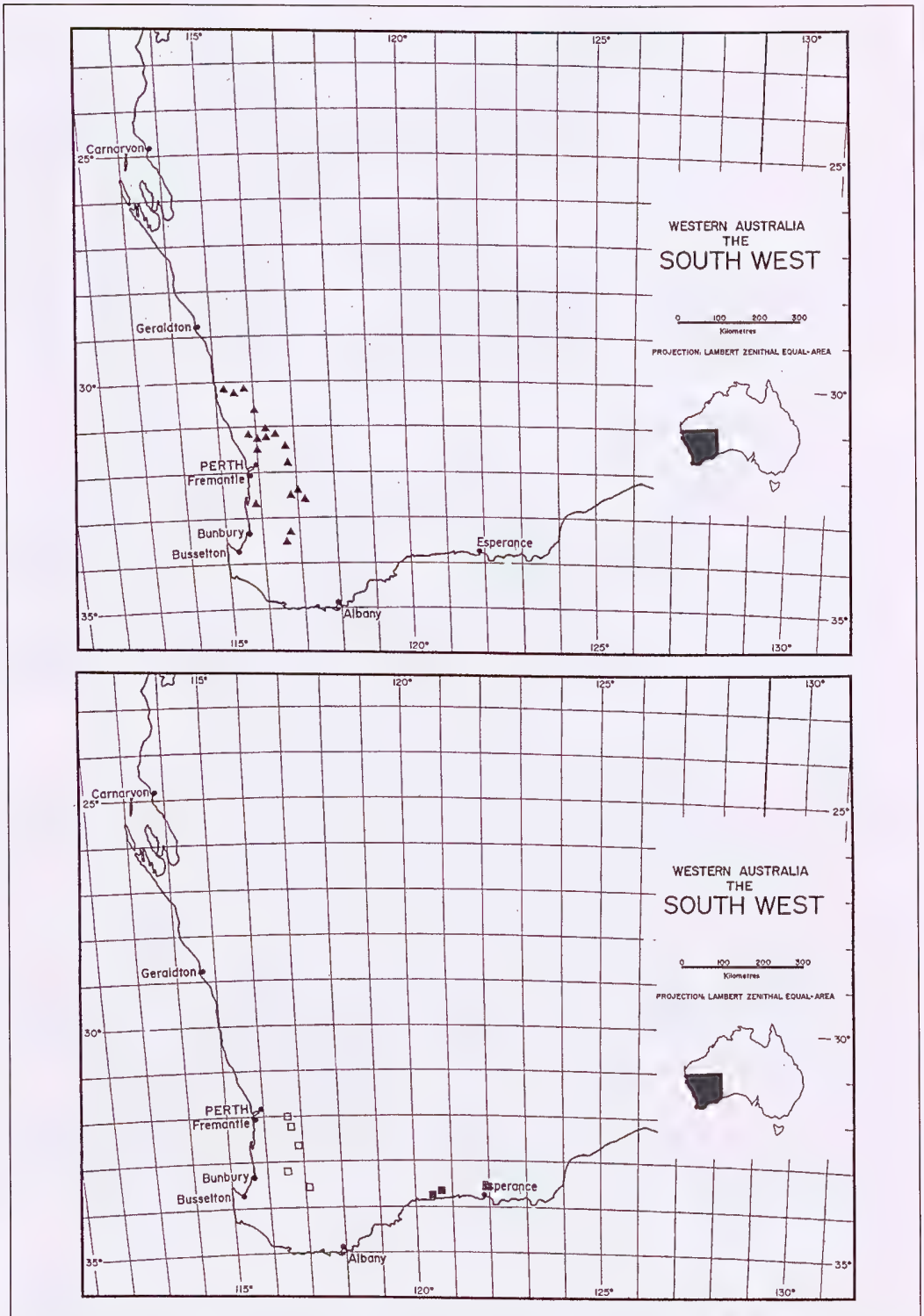


Figure 5. Distribution of *Hibbertia hibernioides*. A – var. *hibertioides* ▲; B – var. *meridionalis* ■ and var. *pedunculata* □.

Habitat. Occurs usually on lateritic soils in eucalypt woodland or heath.

Phenology. Flowers recorded June to December; fruits recorded November to January.

Conservation status. Widespread and not considered under threat.

Notes. Some collections from Dryandra and Tuttanning have somewhat flatter leaves 0.6–1 mm wide (*G. Heinsohn* 99, *T.E.H. Aplin* 786 & 843). Collections from the Tuttanning Reserve east of Pingelly are sometimes somewhat intermediate between *H. hibbertioides* var. *hibbertioides* and *H. hemignosta* in sepal and bract characteristics (*T.E.H. Aplin* 825, *P.G. Wilson* 3908, *J.R. Wheeler* 4131), which may indicate some degree of hybridisation.

5b. *Hibbertia hibbertioides* var. *meridionalis* J.R. Wheeler, var. nov.

A var. *hibbertioides* apice sepalorum acuminato vel breviter caudato et floribus parum parvioribus differt.

Typus: Springdale Rd, 4.7 km E of Fence Rd, 33°51'S, 120°34'E, Western Australia, 19 March 2002, *J.R. Wheeler* 4153 (*holo:* PERTH 06331092; *iso:* AD, CANB, K, MEL, NSW).

Shrub to 0.3 m high. *Leaves* usually green, terete, 10–23 mm long, c. 0.5 mm wide. *Buds* sessile. *Flowers* 7–8 mm diam., sessile; *bracts* subulate or ovate-elliptic and long-caudate. *Sepals* 3.5–5.5 mm long, apex subacute to acuminate, apex of the outer sepal 0.2–0.5(0.8) mm long. *Petals* 3.5–4.5 mm long. *Stamens* 1.5–2(2.5) mm long; anther 0.8–1.2 mm long. (Figure 4E).

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: 26.1 km from Hopetoun on South Coast [Southern Ocean] Rd, c. 1 km to the S along un-named track, 19 Apr. 1998, *M. Bennett* 113; 8 km NW Broomstick Hill on Backmans Rd, 29 Mar. 1983, *M. Burgmann & S. McNee* 1105; 30.5 km SW of Munglinup, 15 May 1996, *R. Davis* 764; [C]oxall Rd (Munglinup), 8 Feb. 1987, *H. Demarz* 11703; 50 km along Springdale Rd off Hopetoun–Ravensthorpe road, 2 Jan. 1983, *A. Strid* 21903; Helms Arboretum, 1 Dec. 1993, *C. Turley* 7/1293; Southern Ocean Rd, c. 27 km E of junction with Hopetoun–Ravensthorpe road, 200 metres S along track towards sea, 19 Mar. 2002, *J.R. Wheeler* 4151 (duplicate AD); Springdale Rd, 4.4 km W from junction with Starvation Boat Harbour Rd, 19 Mar. 2002, *J.R. Wheeler* 4152.

Distribution. Western Australia, South West Botanical Province, IBRA regions of Esperance Plains recorded between just east of Hopetoun and just north and east of Esperance. (Figure 5B).

Habitat. Recorded from sandy soils in mallee woodland, mallee heath and heath often with *Banksia speciosa*, *Adenanthos cuneatus* and *Lambertia inermis*.

Phenology. Flowers recorded only apparently sparsely between December and May.

Conservation status. Recorded as common at some localities and occurring in coastal reserves but probably under-collected possibly due to its sparse flowering only during summer and autumn. Although restricted in distribution this taxon is not considered under threat.

Etymology. The name *meridionalis* refers to the southerly distribution of this variety.

Affinities. Differs from both var. *hibbertioides* and var. *pedunculata* in its sepals which are not distinctly caudate and also in its smaller flowers and usually shorter stamens.

Notes. Despite being clearly geographically and ecologically separated from the other two varieties of *H. hibbertioides* this taxon is treated at the varietal level as the differences are one of degree rather than presence or absence of a particular character. This is also in keeping with the choice of variety rather than subspecies for var. *pedunculata*. The apparent flowering period of var. *meridionalis* is of interest in that flowers have only been recorded from summer and autumn. Although sporadic summer and autumn flowers have been noted var. *hibbertioides* and var. *pedunculata* have their main period of flowering in spring and early summer. No collections of var. *meridionalis* have been made in spring. As the plants were not uncommon at several of the localities one would have expected collections to have been made in spring if the plants were in flower at that time.

5c. *Hibbertia hibbertioides* var. *pedunculata* J.R. Wheeler, var. nov.

A var. *hibbertioides* floribus distincte pedunculatis differt.

Typus: Catchment Rd, Talbot State Forest, York, 200 metres south of Defor Rd T junction, 31°59'S, 116°36'E, Western Australia, 6 October 1999, *F. & J. Hort* 647 (*holo:* PERTH 05440300; *iso:* AD, CANB, K).

Shrub to 0.2 m high, compact, often ground hugging and cushion-like. *Leaves* usually greyish to glaucous, terete to semi-terete, 5–13 mm long, 0.3–0.6(1) mm wide. *Flowers* 8–15 mm diam., pedunculate; *peduncle* slender, (3)5–18 mm long with occasional subulate leaf-like bracts. *Sepals* 4.5–7 mm long, the apex long-caudate with the tip of the outer sepal up to 3 mm long. *Petals* (4)5–8 mm long. *Stamens* 2.5–3.5 mm long; anther 1.3–1.7 mm long. (Figure 4F)

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: Site 14, Defor Rd, 3 km SSW of Coolakin Spring, 11 Nov. 1996, *M.G. Allen* 528; 35 km S of Arthur River, 20 Oct. 1983, *R.J. Cranfield* 4687; c. halfway between Collie and Williams, May 1972, *L. Dodd* s.n.; Flynn Forest Block, Shire of York, Crawler Rd 200 metres W of Kent Rd, 18 Apr. 1999, *F. Hort* 451; Dryandra State Forest, c. 7 km directly N of Contine, Dryandra Rd, 15 Oct. 1997, *T.R. Lally & B. Fuhrer* TRL1475; Dryandra State Forest, Narrogin map 1:100,000 grid, reference 027742, WA, 18 Sep. 1987, *D.M. Rose* 274; Private reserve (Luelf's), Talbot Rd, 5 Dec. 1997, *H. Seeds* 85; Mercer Rd, SW of York, 19 Nov. 1998, *H. Seeds* 120; 52 miles [83 km] E of Perth on York Rd, 11 Dec. 1971, *F.A. Sharr* 3649; Mercer Rd, 1.1 km W from Talbot Rd, 9 Oct. 2001, *J.R. Wheeler* 4130 (duplicate MEL).

Distribution. Western Australia, South West Botanical Province, IBRA regions of Avon Wheatbelt. Recorded from near York to south of Arthur River. (Figure 5C).

Habitat. Recorded from lateritic soils or sand, mainly in wandoo woodland or mixed wandoo, marri and powderbark woodland.

Phenology. Flowers mainly September to December, but flowers also recorded for April and May.

Conservation status. Documented as “plentiful” at some sites and occurring in State Forest. Not considered under threat.

Etymology. From the Latin *pedunculatus* – provide with a peduncle.

Affinities. Differs from *Hibbertia hibbertioides* var. *hibbertioides* and var. *meridionalis* in its distinctly pedunculate flowers. Otherwise very similar to var. *hibbertioides*, with both varieties occurring quite close together in the Dryandra area.

Notes. *Hibbertia hibbertioides* var. *pedunculata* is treated at the varietal level as there is no apparent distributional or ecological separation from var. *hibbertioides*. Some collections from the Dryandra area have shorter peduncles 2–5 mm long and also somewhat broader and flatter leaves 0.6–1 mm wide (*A.G. Wells s.n., T.R. Lally & B. Fuhrer* TRL1475). These specimens appear intermediate between the two varieties and may indicate hybridisation between the taxa. The Dryandra area is one where both these varieties and *Hibbertia hemignosta* occur and hybridisation between the taxa is suspected.

6. *Hibbertia pulchra* Ostenf., *Biol. Meddel. Krongel. Danske Vidensk. Selsk.* 3(2): 88 (1921). *Type:* Palgarup, south of Bridgetown, Western Australia, 2 October 1914, *Ostenfeld* 309 (*holo:* C n.v.; *iso:* MEL 666910, PERTH 04430522).

Shrub to 0.6 m high, sprawling to erect, often multistemmed. *Leaves* in axillary clusters, the clusters sometimes distant, sessile, often spreading, linear to very narrowly obovate, 4–25 mm long, 0.4–1.5(2.2) mm wide, somewhat flattened to flat or rarely semiterete, upper surface flat, lower surface flat or convex with a narrow or broad enlarged midrib, glabrous or rarely with curled hairs, obtuse. *Flowers* axillary or terminating short axillary shoots, sessile, 6–15 mm diam. *Bracts* 1–3, conspicuous or inconspicuous, circular to depressed ovate or ovate to elliptic, 0.5–3 mm long, 0.5–3 mm wide, herbaceous or thin and somewhat chartaceous, frequently ciliolate, obtuse, minutely apiculate or acute, the outermost sometimes with a leaf-like apex. *Sepals* 5, basally connate, broadly elliptic to elliptic, sometimes ciliolate, obtuse or minutely apiculate; outer sepals 2–4(5) mm long, 1.2–3.5 mm wide; inner sepals 3.5–5(6) mm long, 2–4 mm wide. *Petals* 5, yellow, obovate, 4–9 mm long, emarginate. *Stamens* 11 arranged in 3 fascicles each of 3 fused stamens and 2 free stamens, 1.5–2.5(3) mm long; filaments fused for most of their length but one of the 3 longer and held inwards; anther oblong to obovate with the tip slightly incurved, apex often dilated after anthesis, 0.8–1.5 mm long; staminodes absent. *Carpels* 3, globular to ellipsoid, 0.6–1.2 mm long; style 1–2.5 mm long; ovule 1 per carpel. *Fruiting carpels* ovoid to ellipsoid, 1.5–2 mm long; seed brown ellipsoid, 1.5–1.8 mm long with a white waxy basal aril.

Notes. Three infraspecific taxa are recognised. Varietal rank has been adopted because the taxa are all quite similar in overall morphology and there is no clear ecological or distributional separation.

Key to varieties of *Hibbertia pulchra*

- 1. Bracts conspicuous, 1.5–3 mm long. Upper leaf surface flat, lower surface with a narrow raised midrib, rarely leaf semi-terete
 - 2. Bracts circular to depressed ovate, 2–3 mm wide var. **pulchra**
 - 2. Bracts ovate to elliptic, 1–1.3 mm wide var. **acutibractea**
- 1. Bracts inconspicuous, 0.5–1.5 mm long. Upper leaf surface flat, lower surface with a broad raised midrib var. **crassinervia**

6a. *Hibbertia pulchra* Oстенf. var. *pulchra*

Shrub, multistemmed, sprawling to 0.6 m high. *Leaves* in axillary clusters, the clusters sometimes distant, sessile, often spreading, linear to very narrowly obovate, 5–25 mm long, 0.5–1.5(2.2) mm wide, flat but quite thick and often with a narrow raised midrib on the lower surface, glabrous, obtuse. *Flowers* axillary or terminating short axillary shoots, sessile, 8–15 mm diam. *Bracts* 2 or 3, conspicuous, circular to depressed ovate, 1.5–3 mm long, (1.5)2–3 mm wide, thin and somewhat chartaceous, frequently ciliolate, obtuse and sometimes minutely apiculate, the outermost often with a leaf-like apex. *Sepals* 5, basally connate, broadly elliptic, often ciliolate, obtuse and often minutely apiculate; outer sepals 3–4(5) mm long, (2)2.5–3.5 mm wide; inner sepals 4–5(6) mm long, (2.5)3–4 mm wide. *Petals* 5, yellow, obovate, 4–9 mm long, emarginate. *Stamens* 11 arranged in 3 fascicles each of 3 fused stamens and 2 free stamens, (1.5)2–2.5(3) mm long; filaments fused for most of their length but one of the 3 longer and held inwards; anther oblong to obovate with the tip slightly incurved, apex often dilated after anthesis, 1–1.5 mm long. *Carpels* 3, globular to ellipsoid, 0.6–1.2 mm long; style 1–2.5 mm long; ovule 1 per carpel. *Fruiting carpels* not seen mature. (Figure 3E–G).

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: Dinninup proposed reserve, 20 July 1957, *E.M. Bennett* 2030; end of road to McKenna property off Sandalwood Rd, S of Bowelling, 13 Sep. 1993, *V. Crowley* 403; W side of Gardner Rd, 0.5 km NW of Mount Gardner base, Two Peoples Bay Nature Reserve, 15 Nov. 1991, *N. Gibson & M. Lyons* 1135; along Muir highway, c. 4 miles [6.5 km] W of Lake Muir, 19 Oct. 1971, *R.D. Hoogland* 12157 (duplicates A, BISH, CANB, E, HBG, K, L, MEL, NSW all *n.v.*); Site 77, 7 km ESE of Noggerup, 12 Sep. 1997, *P.A. Jurjevich* 2156; Capel Nature Reserve, 12 Sep. 1994, *G.J. Keighery* 13566; Unicup Nature Reserve, 28 Oct. 1997, *G.J. Keighery & N. Gibson* 2200; Palgarup, 25 Oct. 1947, *R.D. Royce* 2375; Bridgetown–Pemberton district, Sep. 1935, *T.N. Stoate s.n.*; Muir highway, c. 33 km ESE of Nyamup and c. 110 km W of Mt Barker, 29 Sep. 1986, *J.R. Wheeler* 2482.

Distribution. Western Australia, South West Botanical Province, IBRA regions of Swan Coastal Plain, Jarrah Forest and Warren. Recorded from Collie and Capel south east to Lake Muir and also just east of Albany at Two Peoples Bay. (Figure 6A).

Habitat. Sandy soil in heath, shrubland, woodland and forest.

Phenology. Flowers recorded July to November.

Conservation status. Not regarded as endangered.

Affinities. Differs from *Hibbertia hemignosta* in its stamens which have oblong to obovate anthers in which the tip is slightly incurved and the apex often dilated after anthesis. The staminal filaments of the fascicles are fused for most of their length but one of the 3 is longer and held inwards. *Hibbertia pulchra* var. *pulchra* also has very conspicuous broad bracts and flat or somewhat flattened leaves.

6b. *Hibbertia pulchra* var. *acutibractea* J.R. Wheeler, var. *nov.*

A var. *pulchra* bracteis angustioribus acutioribus differt.

Typus: Bluff Knoll, Stirling Range, 34°22'S, 118°15'E, Western Australia, 27 September 1966, *P.G. Wilson* 4177 (*holo:* PERTH 03030741; *iso:* GAUBA, MEL, NSW, WAIT all *n.v.*).

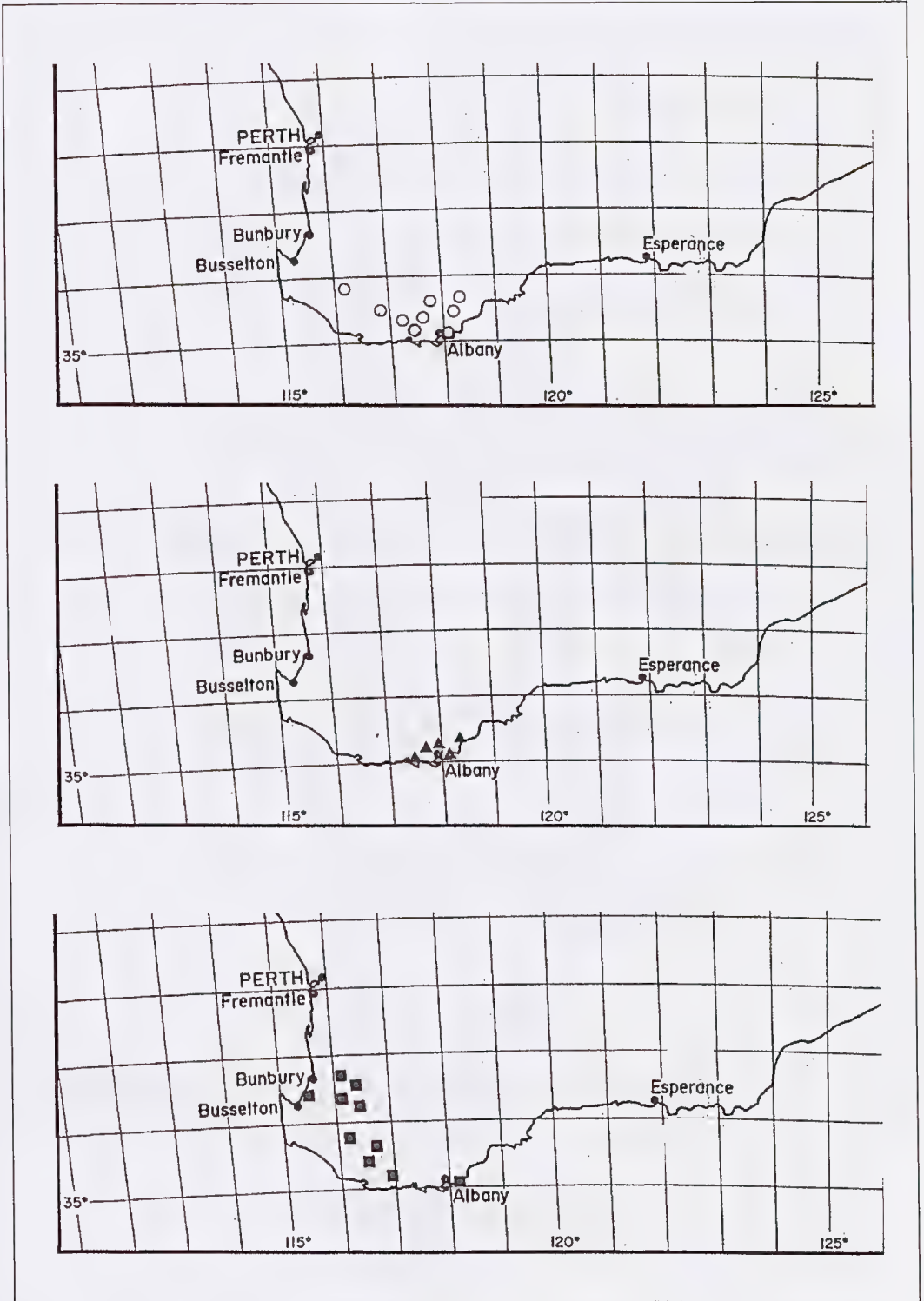


Figure 6. Distribution of *Hibbertia pulchra*. A – var. *acutibractea*. B – var. *crassinervia*. C – var. *pulchra*.

Shrub sprawling to erect, sometimes multistemmed, to 0.5 m high. *Leaves* in axillary clusters, the clusters often distant, sessile, linear, 4–19 mm long, 0.6–1.4 mm wide, flat to semi-terete, upper surface flat, lower surface flat or with a narrow raised midrib or occasionally rounded, glabrous or with curled hairs, apex obtuse. *Flowers* axillary or terminating short axillary shoots, 7–15 mm diam. *Bracts* 1–3, conspicuous, elliptic or ovate-elliptic, 1.5–2.5 mm long, 1–1.3 mm wide, often ciliolate, subacute to acute, sometimes apiculate. *Sepals* 5, basally connate, elliptic to oblong-elliptic, obtuse; outer sepals 3–4 mm long, 1.3–2.5 mm wide; inner sepals 3.5–5 mm long, 2–2.5 mm wide. *Petals* 5, yellow, obovate, 4–8 mm long, shallowly emarginate. *Stamens* 11 arranged in 3 fascicles each of 3 fused stamens and 2 free stamens, 1.5–2.5 mm long; filaments fused for most of their length but one of the 3 longer and held inwards; anther oblong to obovate with the tip slightly incurved, apex often dilated after anthesis, 1–1.3 mm long. *Carpels* 3, more or less globular *c.* 1 mm long, *c.* 0.8 mm wide; style *c.* 2 mm long; ovule 1 per carpel. *Fruiting carpels* obovoid-ellipsoid, *c.* 2 mm long and 1.3 mm wide; seed ellipsoid, *c.* 1.8 mm long, with a white basal aril. (Figure 3H).

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: Plot 5040, *c.* 22 km N of Denmark near Blue Lake, 7 Nov. 1991, *A.R. Annels* 1908; Reserve near Quick's farm, Saint Werburgh's Rd off Albany highway near Mount Barker, 12 Sep. 1982, *E.J. Croxford* 1863; Ledge Beach Rd, Lower Kalgan, 9 Sep. 1983, *E.J. Croxford* 2675; Denmark Shire, Sheepwash State Forest, *c.* 1 km S along track from N boundary which starts 2.3 km E from Denmark–Mount Barker road, 16 Aug. 1993, *B.G. Hammersley* 906; Mersea Lake, Wilgarup, Nov. 1962, *W.A. Loneregan* 213; Mount Barker, Plantagenet district, 9 Nov. 1840, *L. Preiss* 2155 (duplicates LD, MEL); Site 146, W off Denbarker Rd, 22 Aug. 1997, *K.A. Redwood* 212; *c.* 900 m WNW of Mt Martin, Albany, 19 Aug. 1998, *E.M. Sandiford* 83; Muir highway, Warren District, 1 Oct. 1970, *P. Skinner* 77; Red Gum Pass, *c.* 1 km N of Red Gum Springs, Stirling Range, 30 Sep. 1986, *J.R. Wheeler* 2499 (duplicates AD, CANB, K).

Distribution. Western Australia, South West Botanical Province, IBRA regions of Jarrah Forest. Recorded between the Stirling Range and Albany extending west to the Muir highway near Perillup Hall with an isolated occurrence south of Bridgetown. (Figure 6B).

Habitat. Occurs on sandy, gravelly or loamy soils in forest, woodland and shrubland.

Phenology. Flowers recorded July to November; fruits recorded for November.

Conservation status. Not regarded as endangered.

Etymology. From the Latin *acutus* – acute, pointed and *bractea* – bract, referring to the acute rather than obtuse bracts.

Affinities. Differs from *Hibbertia pulchra* var. *pulchra* in the shape of its bracts which are more or less elliptic, more or less acute and narrower and often less conspicuous than those of *H. pulchra* var. *pulchra*.

Notes. A suite of specimens from the Stirling Range, Mount Barker and South Stirling have leaves which are more semi-terete in section and have an indumentum of curled hairs on the leaves but are otherwise typical of this taxon.

6c. *Hibbertia pulchra* var. *crassinervia* J. R. Wheeler, var. nov.

Var. *pulchrae* affinis sed costa foliorum lata, incrassata, et lamina marginali angusta, bracteis parvioribus inconspicuis differt.

Typus: Albany, c. 4 km east of intersection between Chester Pass Rd and South Coast Highway, 35°0'S, 117°53'E, Western Australia, 25 September 1986, J.R. Wheeler 2453 (*holo*: PERTH 03076601; *iso*: AD, CANB, K, MEL).

Shrub to 0.5 m high. *Leaves* in axillary clusters, the clusters sometimes distant, sessile, linear, 4–15(25) mm long, 0.4–1 mm wide, upper surface flat, lower surface with a broad much-enlarged raised midrib and very narrow thin marginal blade, glabrous, apex obtuse. *Flowers* axillary, 6–12 mm diam. *Bracts* 1–3, usually hidden, ovate to elliptic, 0.5–1(1.5) mm long, 0.5–0.7 mm wide. *Sepals* 5, basally connate, elliptic, obtuse; outer sepals 2–4 mm long, 1.2–2 mm wide; inner sepals 3.5–4.5 mm long, 2–2.5 mm wide. *Petals* yellow, obovate, 4–6 mm long, emarginate. *Stamens* 11 arranged in 3 fascicles each of 3 fused stamens and 2 free stamens, 1.8–2.2 mm long; filaments fused for most of their length but one of the 3 longer and held inwards; anther oblong to obovate with the tip slightly incurved, apex often dilated after anthesis, 0.8–1.2 mm long; staminodes absent. *Carpels* 3, globular to ellipsoid, 0.6–0.7 mm long; style 1–1.5 mm long; ovule 1 per carpel. *Fruiting carpels* obovoid-ellipsoid, 1.8–2 mm long, 1–1.3 mm wide; seed brown, ellipsoid, 1.5 mm long and 1–1.3 mm wide, with a white basal aril. (Figure 3I).

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: 8 miles [13 km] S of Napier River on the Porongurup–Albany road, 15 Sep. 1966, E.M. Bennett 1057; 16 km NNE of Albany off Chester Pass Rd, 5 Oct. 1976, R.J. Chinnock 3237 (duplicate AD *n.v.*); Keith Rd, Hay River off Denmark road east of Denmark, 19 Nov. 1980, E.J. Croxford 1109; Chorkerup Rd, off Hay River Rd Narrikup, 10 Aug. 1984, E.J. Croxford 3344A; King George Sound, Oct. 1898, Col. Goadby B2594; near Kalgan along Bremer Bay road, c 11 miles [18 km] NE of Albany, 23 Oct. 1971, R.D. Hoogland 12190 (duplicates CANB, HBG, K, L, UC, US all *n.v.*); eastern side of pitcher plant swamp, opposite Allembie Park cemetery, Bayonet Head, Albany, 25 July 1985, E.R. Knight *s.n.*; Two Peoples Bay, 10 Sep. 1971, S. Paust 450; Albany, Plantagenet District, 21 Dec. 1840, L. Preiss 2163; Lower King, NE of Albany, Bonaccord Rd, 25 Sep. 1986, J.R. Wheeler 2451 (duplicates AD, NSW).

Distribution. Western Australia, South West Botanical Province, IBRA regions of Jarrah Forest. Recorded from the Albany area extending between Hay River and Two Peoples Bay and north to Narrikup. (Figure 6C).

Habitat. Occurs on sand or loam, sometimes on the margin of seasonally inundated areas in sheoak or banksia-eucalypt woodland and shrubland.

Phenology. Flowers recorded July to November; fruits recorded November.

Conservation status. Although restricted in distribution it is not thought to be endangered.

Etymology. From the Latin *crassus* – thick and *nervius* – nerved, referring to the prominent thickened midvein of the leaves.

Affinities. Differs from *Hibbertia pulchra* var. *pulchra* in its leaf shape and its much smaller inconspicuous bracts. Differs from *H. hemignosta* in its narrow marginal flat leaf lamina each side of the broad thickened midrib and also in its smaller somewhat truncate anthers.

Note. Previously known by the phrase name *Hibbertia* sp. Stirlings (*J.R. Wheeler* 2453).

7. *Hibbertia rupicola* (S. Moore) C.A. Gardner, Enum. Pl. Austral. Occ. 83 (1931). – *Candollea rupicola* S. Moore, *J. Linn. Soc. Bot.* 45: 163 (1920). *Type:* Bruce Rock, Western Australia, *Stoward* 430 (*holo:* BM).

Hibbertia teretifolia var. *bisulcata* F. Muell., *Fragm. Phyt. Austral.* 11: 95 (1880). *Type:* Champion Bay, [Western Australia], *C. Gray* (*lecto:* MEL 666841, here designated). *Excluded syntypes:* Irwin River, [Western Australia], *F. Mueller* (MEL 666842); a second excluded syntype (Cape Arid, *Maxwell*) = *H. hamata*.

Shrub to 0.7(1) m high; branchlets glabrescent, hairy when young. *Leaves* densely clustered on short axillary shoots which are spirally arranged on the branchlets, sessile, linear, (2)3–15(20) mm long, 0.4–0.7 mm wide, glabrous, margins tightly revolute to the midrib, apex a short recurved point. *Flowers* terminating short shoots, 8–14 mm diam., subsessile to shortly pedunculate with the peduncle up to 5 mm long; *bracts* inconspicuous and subulate to leaf-like or apparently absent, 1 or 2 usually present on the peduncle when present. *Sepals* 5, elliptic, thin, glabrous, rarely with a few sparse cilia; outer sepals: body 3–4 mm long, 1.5–2 mm wide; apex long-caudate, 1.5–3 mm long; inner sepals: body 3.5–6.5 mm long, 2.5–3.5(4) mm wide; apex shortly caudate, 0.5–1 mm long. *Petals* 5, yellow, obovate, 5–10 mm long, shallowly emarginate. *Stamens* 9–17, in 3 fascicles of 3–6 stamens and also with 2 single stamens, or in 5 fascicles of 2–6 stamens, 2.5–3.5 mm long; filament (1)1.5–2.5 mm long, the fascicles usually fused for half to three-quarters of their length; anther narrowly oblong-elliptic, (1)1.3–2 mm long, occasionally some anthers shrivelled and probably sterile. *Carpels* 3, more or less globular, 1–1.5 mm diam., glabrous; ovule 1 per carpel; style 1.5–4 mm long. *Fruiting carpels* obovoid, 2.5–2.8 mm long, 1.7–2 mm wide; seed brown, globular to broadly ellipsoid, 1.5–1.7 mm long, with a greatly divided white waxy aril extending half the length of the seed. (Figure 4G)

Selected specimens examined (all PERTH except where indicated). WESTERN AUSTRALIA: 25 km E of North Bannister, 5 Dec. 1996, *R. Davis* 1601; Mt Churchman, 17 Oct. 1966, *C.A. Gardner* 19004; 33 km W of Three Springs on the Three Springs–Dongara road, near Mooladarra Spring, 8 Nov. 1978, *E.A. Griffin* 1510; c. 17 miles [27 km] E of Pithara, along road to Kalannie, 28 Sep. 1971, *R.D. Hoogland* 12037; c. 19 miles [30 km] N of Hopetoun along Ravensthorpe Rd, 7 Oct. 1971, *R.D. Hoogland* 12087; c. 13 miles [21 km] ESE of Dumbleyung, 9 Oct. 1971, *R.D. Hoogland* 12100; Wattle Rocks, c. 21.5 km NE on Mt Holland track from Hyden–Norseman road, 17 Oct. 1995, *B.J. Lepschi* 2165; Toompup Rd South, c. 5 km from junction of Gnowangerup–Jerramungup road, 2 Oct. 1986, *J.R. Wheeler* 2509; Moorine Rocks, N of Moorine Rock townsite, 22 Sep. 1988, *J.R. Wheeler* 2605; Ashdale Rd river crossing (tributary of Lort River), 2.4 km E of Beltana Rd, 16 Oct. 1984, *S. Wheeler* 11.

Distribution. Western Australia, South West Botanical Province, IBRA regions of Geraldton Sandplain, Swan Coastal Plain, Jarrah Forest, Avon Wheatbelt, Roe and Esperance Plains and the Eremaean Province IBRA region of Coolgardie. Widespread extending from just north of Geraldton south east to the south coast and inland to Diemals, Moorine Rock and Ravensthorpe. (Figure 2C).

Habitat. Occurs in woodland, mallee, shrubland or heath on sandy, lateritic, loam or clay soils, occasionally associated with rocky outcrops.

Conservation status. Widespread and not considered endangered.

Affinities. Closely related to *Hibbertia hibbertioides* from which it differs in the apparent 2-grooved undersurface of the leaf indicating the tightly revolute leaf margins and also in its stamens where there is a greater degree of fusion of the filaments of each fascicle. The stamens are also more variable in number than in *H. hibbertioides*. Also closely related to *Hibbertia hamata* from which it differs in its straight rather than recurved leaves with more tightly revolute leaf margins (see note under that species).

Note. Of the three syntypes of *Hibbertia teretifolia* var. *bisulcata*, only two of them that of Gray and that of Mueller match the original description. The Gray specimen from Champion Bay is chosen as the lectotype as it is more complete. The Cape Arid specimen of Maxwell is excluded as belonging to *H. hamata*.

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References

- Bentham, G. (1863). "Flora Australiensis." Vol. 1, pp. 16–48. (Reeve: London.)
- Hoogland, R.D. (1974). New combinations in *Hibbertia* (Dilleniaceae). *Kew Bulletin* 29: 155–156.
- Ostenfeld, C.H. (1921). Dilleniaceae. In: Contributions to West Australian Botany, *Det Kongelige Danske Videnskaberne Selskab Biologiske Meddelelser* 3(2): 87–91.
- Thackway, R. & Cresswell, I.D. (eds) (1995). An interim biogeographic regionalisation for Australia: a framework for establishing the national system of reserves, version 4.0. Published Report of the Australian Nature Conservation Agency: Canberra.
- Toelken, H.R. & Wheeler, J.R. (2002). Notes on *Hibbertia* (Dilleniaceae) 4. The identity of *H. enervia*. *Journal of the Adelaide Botanic Gardens* 20: 1–4.
- Wheeler, J.R. (2002a). A review of *Hibbertia glomerata sens. lat.* (Dilleniaceae). *Nuytsia* 14(3): 411–418.
- Wheeler, J.R. (2002b). Two new species of *Hibbertia* section *Candollea* (Dilleniaceae) from the south west of Western Australia. *Nuytsia* 14(3): 419–426.
- Wheeler, J.R. (2002c). Three new subspecies of *Hibbertia glomerata* from the Darling Range, Western Australia. *Nuytsia* 14(3): 427–435.
- Wheeler, J. R. (2002d). A revision of *Hibbertia depressa* and its allies (Dilleniaceae) from Western Australia. *Nuytsia* 15(1): 127–138.

